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(71) Applicant(s)
tom.com enterprises Limited
(Incorporated in the British Virgin Islands)
PO Box 957, Offshore Incorporations Centre,
Road Town, Tortola, British Virgin Islands

(72) Inventor(s)
Carl Chang
Sandroff Ma
Leo Hau

(74) Agent and/or Address for Service
Lloyd Wise, Tregear & Co
Commonwealth House, 1-19 New Oxford Street,
LONDON, WC1A 1LW, United Kingdom
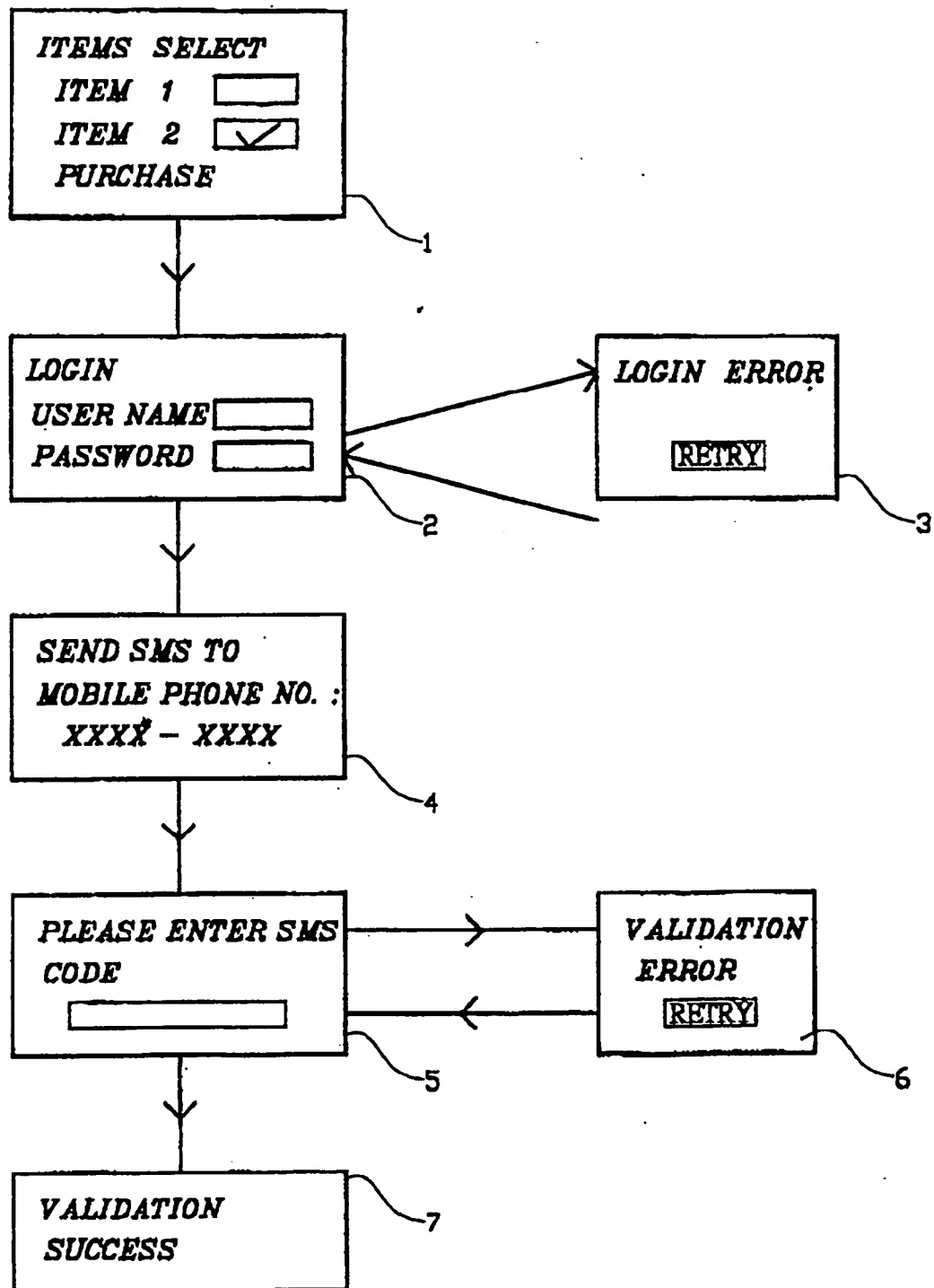
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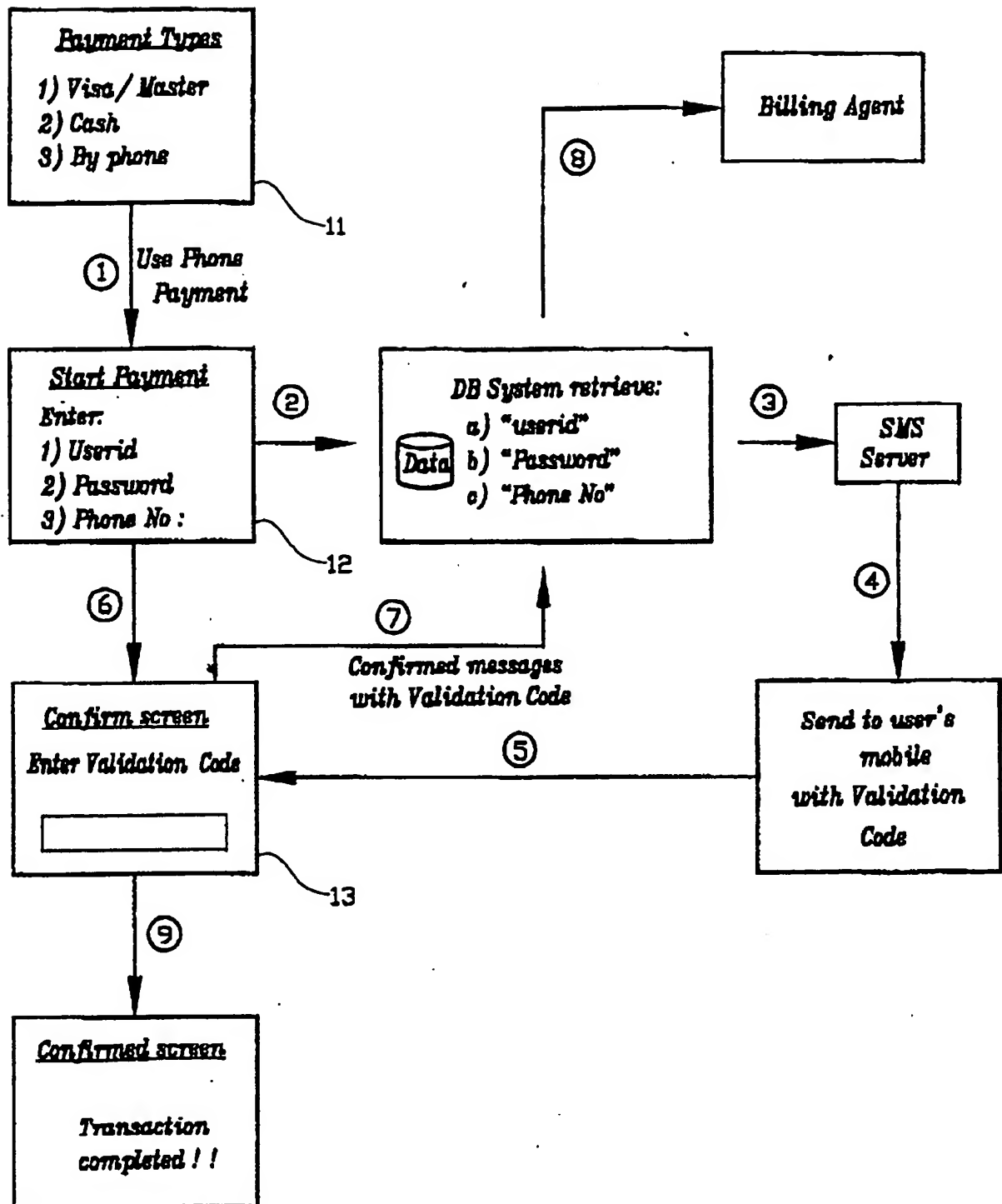U1S S2124 S2196 S2215

(56) Documents Cited
EP 0844551 A2   WO 95/19593 A1

(58) Field of Search
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(54) Abstract Title
Secure communication

(57) A method is presented for validating a purchase instruction which a user transmits to a server by internet. The server accesses a database to obtain contact information for the user, e.g. a phone number, and transmits a validation code to the user using the contact information. The user returns the validation code to the server by internet, and so validates the purchase.

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

ITEMS SELECT

ITEM 1 □

ITEM 2 ☑

PURCHASE

1

LOGIN

USER NAME □

PASSWORD □

2

LOGIN ERROR

RETRY

3

SEND SMS TO
MOBILE PHONE NO. :
XXXX – XXXX

4

PLEASE ENTER SMS
CODE

5

VALIDATION
ERROR
RETRY

6

VALIDATION
SUCCESS

7

Fig.1

212

Payment Types

1) Visa / Master
2) Cash
3) By phone

— 11

Billing Agent

⑧

① Use Phone Payment

Start Payment

Enter:
1) Userid
2) Password
3) Phone No :

— 12

② →

DB System retrieve:
a) "userid"
b) "Password"
c) "Phone No"

Data

③ →

SMS Server

④

⑥

⑦

Confirmed messages
with Validation Code

Confirm screen

Enter Validation Code

[   ]

— 13

⑤ ←

Send to user's mobile with Validation Code

⑨

Confirmed screen

Transaction
completed ! !

Fig.2

1

Secure communication

Field of the invention

5   The present invention relates to methods and apparatus for securely transferring

instructions over a telecommunications network, such as the internet. The invention is

especially useful for instructing commercial transactions online.

Background of the invention

10

Internet commerce is presently growing rapidly, and encompasses the

purchase by users of goods, services and even information (e.g. it is now possible to

pay to download music).

To make a purchase, a user communicates purchase instructions via the

15   internet to a website operated by a retailer. The instructions often include details of a

credit card account held by the user. Typically, this data is printed on the credit card

itself. The retailer accepts the purchase (e.g. the retailer may dispatch the purchased

goods), and debits the user's credit card accordingly.

The above system is subject to a security problem that the data on the credit

20   card is accessible to any third party who gains access to the card. Such a person can

remember the credit card data printed on the card, and make purchases on his own

account at any later time.

Often a single user will make multiple purchases from the same website over

an extended period of time. To avoid the necessity for a given user to transmit the

same credit card data repeatedly, it is known for the website to maintain a database of

credit card information for many respective users. Each user is supplied with (or

chooses) identification data which identifies him. The identification data includes a

5   password and normally also a user name. Whenever a user wishes to make a purchase

from the website he supplies the website with his identification data. The website uses

the identification data to access the database of credit card data, and extracts the credit

card information for the user.

This arrangement exacerbates the security problem identified above, since a

10   third party who gains access to the identification data can use the website to make

purchases. Such a third party may, for example, be an operative of the retailer.

Alternatively, the third party may gain access to the identification data because the

user has recorded it somewhere (e.g. on paper) to avoid having to remember it. In

fact, the level of crime associated with online purchasing is rising rapidly.

15   Although, as explained, the problem of internet security is particularly acute in

the example of online purchasing, it arises in other cases also. Indeed, there are many

instances in which a user wishes to communicate securely with a website.

Summary of the invention

20   The present invention seeks to provide methods and apparatus for secure

internet communication, especially for transmitting purchase instructions to an

internet retailer.

In general terms the present invention proposes that user supplies a website

with data indicating his identity. The website accesses a database of contact data in

relation to a second telecommunications network, to find the contact data for the user.

For example, the second telecommunications network may be a telephone network

(e.g. a mobile telephone network), and the contact data may be the user's telephone

5   number. The website contacts the user using the second telecommunications network

to check the identity of the user.

For example, the website may send the user a validation code. This may be

sent as part of a message to a mobile phone owned by the user. The user reads the

validation code, and sends it to the website by internet (e.g. by entering it onto a

10   webpage presented on the user's browser). Thus, a third party will only be able to

make use of the user's account with the website if he has access to the

telecommunications device in the second telecommunications network associated

with the contact data.

The database may be maintained by the website itself, as a database of its

15   contacts. Alternatively, the database may be a database maintained by an operator of a

the second telecommunications network. In fact, a plurality of telephone operators

may maintain respective databases. The user may indicate his telephone number to the

website, so that the website can contact the appropriate telephone operator, and thus

the correct database.

20   Having validated the identity of the user, the site may issue the bill in respect

of the purchase to a credit card account in the normal manner (e.g. by asking the user

to enter credit card details, or by accessing a database of previously entered credit card

data). More preferably, however, the bill for the purchase may be paid from a

financial account associated with the second telecommunications network. For example, it may appear on the user's next monthly telephone bill. This obviates the need for any separate credit card account.

5   Brief description of the Figures

An example of the invention will now be explained in detail, for the sake of example only, with reference to the following figures, in which:

Figure 1 shows the screens presented to the user in a first embodiment of the invention; and

10   Fig. 2 is a block diagram of the steps in a second embodiment of the invention.

Detailed description of embodiments

Referring firstly to Fig. 1, the area labelled 1 represents schematically the display on a user's browser at a certain instant, that is the user's screen. The screen 1

15   is a display generated by a server which functions as an online retailer. Screen 1 indicates a list of items (e.g. a user's "shopping basket"). By checking the box (and perhaps clicking on a "purchase" button), the user indicates that he wants to pay for "item 2".

The display then changes to screen 2, in which the user is invited to enter

20   identification data, specifically his user name and password. The server maintains a database of user names and passwords, so that it can verify the result. If he is unsuccessful in doing this, he is directed to screen 3, and is invited to retry.

If he is successful, the user is directed to screen 4. At this point the server

indicates that it is sending a message to a mobile phone (or other message reception device, such as a pager), and gives the number of the mobile phone. This number may be taken from a database which the server has accessed using the identification data, or alternatively the user may enter the telephone number himself into the screen 4. In

5   the latter case, the fact that there is a user associated with the input identification data and the telephone number is verified (e.g. by contacting the operator of the telephone system).

The display then changes to screen 5. The message sent to the mobile phone contains a validation code. The user can enter this, reading it from the screen of the

10   mobile phone, and it is verified. If the user has entered the code unsuccessfully, he is directed to screen 6, and invited to retry.

If the user enters the code successfully, he is directed to screen 7. The purchase is completed, and the server issues a bill to the account associated with the mobile telephone number.

15   Turning to Fig. 2, a block diagram is shown of the nine payment steps in a second embodiment of the invention.

At a first instant, the user is presented with a screen 11, inviting him to specify whether the purchase is to be made by visa, in cash (e.g. transmitted to the website operator by post), or by a phone validation (e.g. according to the present invention).

20   In step 1, the user specifies that he wants a telephone validation. The screen changes to screen 12. The user is invited to input a user ID, password and telephone number (indicating a telephone account which the user wishes to use for the validation). Entering this data is step 2.

All this data is verified (step 3) by accessing a database (e.g. maintained by the telephone operator) which contains the details of the user's name, password and telephone number.

The retailer server then sends (step 4) a signal to an SMS (short message servive) server. The SMS server sends (step 5) a message to the telephone number specified by the user, containing a verification code (this may for example be generated by the retailer server using a random number generator, or generated by the SMS server itself and transmitted to the retailer server).

In step 6 the user is presented with screen 13, and asked to enter the validation code, which he can read from the screen of his mobile phone. He does this in step 7.

In step 8 the retailer server validates the validation code, which it has remembered. It then sends a bill to a billing agent, which may be in any industry with a conventional billing system in place, such as a telecommunications, utilities, banking or finance company. For example, it may be the operator of the mobile phone network.

After the transaction is processed successfully, the user is sent a confirmation message (step 9).

Although the invention has been explained above in relation to particular embodiments, many modifications are possible within the scope of the invention as will be clear to a skilled person. For example, although the invention has been explained above in relation to instructing purchases, it is not limited in this respect. Rather the method may be applied in any situation in which it is wished to verify the identity of a user.

Furthermore, although the method has been explained above with reference to a user communicating primarily by internet, the invention is applicable also in the case that the user communicates with the retailer by any other telecommunication network. For example, the user may be using a point of sales terminal, and view any of the screens shown in the embodiments on that terminal.

Claims

1. An internet-based method for validating a purchase instruction, the method comprising:

5   receiving by internet, from a user, purchase information specifying a purchase the user wishes to make;

receiving from the user by internet identification information indicating the identity of the user;

using the identification information to extract, from a database, contact

10 information for the user over a second telecommunication network;

using the contact information to transmit a validation code to the user over the second telecommunications network;

.receiving a validation code from the user by internet; and

verifying that the validation code transmitted to the user corresponds to the

15 validation code received from the user.

2. A method according to claim 1 in which the second telecommunications network is a telephone network, such as a mobile phone network.

20 3. A method according to claim 1 or claim 2 in which said validation code is sent as a text message.

4. A method according to any preceding claim further including debiting a

financial account, associated with the user and with the second telecommunication work, in respect of the purchase.

5. A server system for operating internet commerce, the server having:

interface generation means for generating a user interface to receive from a user purchase information specifying a purchase the user wishes to make, and identification information indicating the identity of the user;

purchase satisfaction means for completing the purchase specified by the purchase information;

extraction means for extracting from the database, containing contact information for a plurality of users over a second telecommunication network, said contact information for a specific user based on the identification information; and

transmission means for transmitting a validation code to the user over the second telecommunications network based on the extracted contact information;

the interface means being arranged to receive a validation code from the user by internet; and

the server system further comprising means for verifying that the validation code transmitted to the user corresponds to the validation code received from the user, and in that case controlling the purchase satisfaction means to satisfy the purchase.

6. A server system according to claim 5 in which the transmission means is arranged to transmit the validation code to the user by instructing a messaging service to transmit to the user, using the extracted contact data, a text message including the

validation code.

7.   A method of verifying the identity of a user, the method comprising:

receiving from the user, via a first telecommunication network, identification

5   information indicating the identity of the user;

using the identification information to extract, from a database, contact

information for the user over a second telecommunication network;

using the contact information to transmit a validation code to the user over the

second telecommunication network;

10   receiving a validation code from the user over the first telecommunication

network; and

verifying that the validation code transmitted to the user corresponds to the

validation code received from the user.

Application No:	GB 0011673.1	Examiner:	Mike Davis
Claims searched:	1-7	Date of search:	21 September 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

    UK Cl (Ed.R): G4H (HTG), G4A (AAP)

    Int Cl (Ed.7): G06F, G07F

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	EP 0844551 A2 (VENEKLASE) whole document	1,5,7 at least
X	WO 95/19593 A1 (KEW ET AL) whole document	"